Northern Technical University
ألجامعة التقنية الشمالية

First Cycle – bachelor's degree (B.Sc.) – Cybersecurity and Cloud Computing Techniques Engineering

بكالوريوس - هندسة تقنيات الامن السيبراني والحوسبة السحابية

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1. Overview

This catalogue is about the courses (modules) given by the program of Cybersecurity and Cloud Computing Techniques Engineering to gain the Bachelor of Technical Engineering degree. The program delivers (45) Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

2. Undergraduate Courses 2023-2024

Module 1

Code	Course/Module Title	ECTS	Semester
BCYSCET403-S2	Reverse Engineering: Malwares Analysis	7	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	96
Description			
The Reverse Engineering: Malware Analysis module is a comprehensive module that teaches students how to analyze malware using various tools and techniques. The module covers a range of topics, including static and dynamic analysis, triage, and code analysis.			

Module 2

Code	Course/Module Title	ECTS	Semester
CYSCET400-S1	Intrusions Detection	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	78	72
Description			
The Intrusion Detection module is designed to provide students with an understanding of the tenets of intrusion detection, the types of intrusion detection products, and traffic analysis. The module will focus on signature-based detection methods and signature base intrusions detection.			

Module 3

Code	Course/Module Title	ECTS	Semester
BCYSCE 402- S1	AI for Cybersecurity	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	71
Description			
This module explores the intersection of cybersecurity and artificial intelligence (AI), providing students with the knowledge and skills necessary to govern and secure AI and machine learning systems. The course covers key AI technologies, including machine learning and natural language processing, and their applications in cybersecurity. Students will learn about the impact of AI on the cybersecurity ecosystem, including threat actors, defenders, regulatory and government agencies			

Module 4

Code	Course/Module Title	ECTS	Semester
BCYSCE 403- S1	Cloud Application	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	46
Description			
This module introduces cloud-native applications and their development and support. The course covers the basic building blocks and properties expected from cloud applications, best practices for developing applications, and migrating on-premises applications to the cloud. The course also covers emergent cloud trends and practices, including hybrid Multiclouds, microservices, serverless, DevOps, cloud-native, and application modernization.			

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Module 5

Code	Course/Module Title	ECTS	Semester
BCYSCE 404- S2	IoTs and Cybersecurity	7	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	96
Description			
This module provides an understanding of what the IoT is and the requirements to design certain IoT solutions. The course covers topics such as IoT architecture, IoT communication, and IoT security. Moreover, it provides students with a foundational understanding of cybersecurity and its importance in today's digital world in IoTs sectors.			

Module 6

Code	Course/Module Title	ECTS	Semester
BCYSCE 402 S2	Digital forensics	7	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			
This module is designed to provide students with an understanding of the basic concepts and principles of digital forensics. The course covers the legal restrictions and requirements around obtaining digital evidence, keeping retrieved digital evidence pristine, analyzing, interpreting, and explaining the results of digital investigations.it also include applying forensic science to the digital artifacts of computers, mobile phones, networks, storage devices, and cyber space.			

Module 7

Code	Course/Module Title	ECTS	Semester
BCYSCE 405 S1-	Research Methodology	3	8
Class (hr/w)	**Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	-	49	26
Description			
This module teaches students how to conduct research in a scientific and ethical manner. The course covers topics, including research design, data analysis, and report writing. It introduces students to the language of research and ethical principles and challenges. The course also covers the elements of the research process within quantitative, qualitative, and mixed methods approaches. Students will learn how to formulate hypotheses, develop testable objectives, select subjects, collect data, analyze data, and interpret results. They will also learn how to write research reports and present findings to colleagues.			

Module 8

Code	Course/Module Title	ECTS	Semester
BCYSCE 400 - S2	IT Project Management	5	8
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
This module is designed to equip students with the knowledge and skills required to plan, design, and deliver software management projects on time and on budget, with a strategic focus on developing multi and intra-disciplinary characteristics of modern digital and cybersecurity project-based environments. The module will include defining the scope of a project, creating, and managing the project plan, identifying key stakeholders, managing the budget, ensuring all work is compliant with the relevant security standards, and completing the project within the deadline.			

Module 9

Code	Course/Module Title	ECTS	Semester
BCYSCE 400 - S2	Graduate Project Design	3	7
Class (hr/w)	**Pract.**	**SSWL (hr/sem)**	**USSWL (hr/w)**
-	**2**	34	41
Description			
The main purpose of the project graduation course is to encourage the students to apply the knowledge they have acquired during their study. The projects need to integrate engineering criteria and realistic constraints, such as economic, environmental, moral, security, social, political, and sustainability-related considerations.			

Module 10

Code	Course/Module Title	ECTS	Semester
BCYSCE 400 - S2	Graduate Project Implementation	4	7
Class (hr/w)	**Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
-	**Pract.**	34	66
Description			
The main purpose of the project graduation course is to encourage the students to apply the knowledge they have acquired during their study. The projects need to integrate engineering criteria and realistic constraints, such as economic, environmental, moral, security, social, political, and sustainability-related considerations.			

Module 11

Code	Course/Module Title	ECTS	Semester
BCYSCE 402 S2	Practicing Cybersecurity: Ethical Hacking and Vulnerabilities Analysis	7	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
1	3	63	112
Description			
This module is hands-on and teaches students how to research, discover and scan targets, analyze vulnerabilities and test attack methods and tools for practical experience. The course is designed to teach students how to choose the right tools when performing a cybersecurity penetration test and to explain why the chosen technique will work. The module covers topics such as threats and vulnerabilities, password cracking, web application attacks, IoT and OT attacks, cloud computing, pen testing fundamentals.			

Module 12

Code	Course/Module Title	ECTS	Semester
BCYSCE 300- S3	English Language	3	Summer
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	-	33	42
Description			
This Module introduces students to practical skills such as network installation and configuration, and other skills and knowledge they gain through their study in the first two levels. The activities will be conducted in a controlled environment, allowing students to experiment with different tools and techniques. The training will provide students with hands-on experience that allow students to practice their skills in work environment and in a safe and controlled environment.			

Module 13

Code	Course/Module Title	ECTS	Semester
BCYSCE 300 -S1	Introduction to Cryptography	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	2	63	87
Description			
This module introduces students to the fundamental concepts of cryptography. The course covers the foundations of cryptography, with emphasis on precise definitions and proof techniques. The course covers topics such as one-way functions, encryption, signatures, pseudo-random number generation, zero-knowledge, and basic protocols. The course also discusses public-key techniques that let two parties generate a shared secret key. Throughout the course, students will be exposed to many exciting open problems in the field and work on programming projects.			

Module 14

Code	Course/Module Title	ECTS	Semester
BCYSCE 305 -S1	Introduction to Hardware security	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	64	86
Description			
This is designed to provide students with a fundamental understanding of the security of hardware systems. The course covers a range of topics, including active and passive attacks, reverse engineering, counterfeiting, and the design of hardware security primitives such as random number generators, physical unclonable functions, and crypto processors.			

Module 15

Code	Course/Module Title	ECTS	Semester
BCYSCE 302 -S1	Digital Signal Processing	4	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
This module introduces the theory and methods for processing digital signals. The course teaches the basic concepts of discrete-time signals and proceeds to teach how to analyze data via the Fourier transform, how to manipulate data via digital filters, and how to convert analog signals into digital. The course introduces processing of discrete-time (DT) signals, including fundamental principles of DT systems and signals, in both time and Fourier domains. The course also covers the design of digital filters and the z-transform and its applications.			

Module 16

Code	Course/Module Title	ECTS	Semester
BCYSCE 305 -S1	Fundamental of Cloud Computing	6	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	64	86
Description			
This module is designed to give an introduction and overview of cloud computing. The course covers a wide variety of topics that are critical for understanding cloud computing. The course aims to equip students with basic knowledge of cloud technologies in use today. The course focuses on the core features of cloud technologies, including cloud deployment models, cloud service models, a fundamental understanding of what cloud computing is and how it works.			

Module 17

Code	Course/Module Title	ECTS	Semester
BCYSCE 305 -S2	Secure Software development	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	62
Description			
This module is designed to provide students with the knowledge and skills necessary to develop secure software. The course covers the concepts of software assurance and the fundamentals of the secure software lifecycle as it relates to software development. Students will experience the secure software lifecycle process by developing concrete artifacts and practicing in a lab environment. The course covers topics such as secure coding practices, application security, security testing and auditing, and techniques and tools to develop secure software.			

Module 18

Code	Course/Module Title	ECTS	Semester
BCYSCE 304 -S1	Mobile and Wireless Network	5	5
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	2	64	61
Description			
This module covers various topics relevant to wireless networking and mobile computing. The course introduces students to recent advances in mobile networking and sensing, with an emphasis on practical design aspects of mobile systems. The course covers the basic concepts of telecommunications, basic technology used in wireless communication, examples of wireless communication systems, and communication protocols for wireless networks. The course also investigates telecommunication architectures and protocols for wireless sensor networks and wireless embedded systems, Wi-Fi and wireless local area networks, mobile ad-hoc networks, next-generation cellular systems, and satellite networks.			

Module 19

Code	Course/Module Title	ECTS	Semester
BCYSCE 300-S2	Mobile and Wireless Network Security	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	60	65
Description			
This module includes topics such as wireless and mobile network security overview, design, planning, installation, and security mechanisms and protocols in wireless communication networks. Students will learn about models, design principles, mechanisms, and solutions used in wireless network security to obtain secrecy, integrity, authentication, privacy, crypto key distribution, and access control.			

Module 20

Code	Course/Module Title	ECTS	Semester
BCYSCE 301-S2	Cloud Computing Security	6	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	64	86
Description			
This module is designed to teach the fundamentals of cloud computing and security. It covers the guiding security design principles, design patterns, industry standards, applied techniques, and procedures to prevent and mitigate risks. The course provides an in-depth look at the strengths and weaknesses of cloud computing security, as well as the considerations to consider.			

Module 21

Code	Course/Module Title	ECTS	Semester
BCYSCE 303-S2	Engineering Analysis	4	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	63	37
Description			
This module is designed to teach students the fundamental principles of engineering problem-solving. It covers topics such as linear and vector algebra, particle equilibrium, rigid body motion, and numerical solutions of linear algebraic equations. Students learn how to set up analysis problems that arise in engineering and make data-driven decisions. The course also emphasizes the role of computers in engineering and report writing. Overall, Engineering Analysis is a comprehensive course that familiarizes students with advanced applied mathematics as it relates to engineering.			

Module 22

Code	Course/Module Title	ECTS	Semester
BCYSCE 304-S2	Practicing Cyber Security: Attacks and Countermeasures	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
1	2	49	76
Description			
This module aims to provide learners with a baseline understanding of common cybersecurity threats, vulnerabilities, and risks. covers topics such as business intelligence data mining, information security, risk management, systems security management, penetration testing.			

Module 23

Code	Course/Module Title	ECTS	Semester
BCYSCE 302 -S2	Operating System Security	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	64	61
Description			
This module is designed to teach students how to safeguard computer operating systems. The course aims to identify security threats, configure operating systems to industry security standards. The course covers topics such as protection systems, foundational security principles, classic approaches to system security, system vulnerabilities, mandatory access controls in research and commercial operating systems, capability systems, virtual machines, and security kernels.			

Module 24

Code	Course/Module Title	ECTS	Semester
BCYSCE 200 -S1	Computer Electronics	5	6
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
This module covers the basic components of electronics such as diodes, transistors, and op amps, and their basic operation and some common applications. The module teaches students to design digital circuits using a high-level abstraction called Register Transfer Language (RTL). the Register Transfer Designs course teaches students how to design digital circuits using RTL, a powerful high-level method of describing the architecture of a circuit.			

Module 25

Code	Course/Module Title	ECTS	Semester
BCYSCE 203 -S2	Operating Systems	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	72
Description			
This module teaches the basic abstractions, mechanisms, and implementations of operating systems. The course covers topics such as Process and Thread Management, Resource Management and Communication, concurrent programming (threads and synchronization), inter-process communication.			

Module 26

Code	Course/Module Title	ECTS	Semester
BCYSCE 200 -S2	Computer Networks	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	46
Description			
This module provides a comprehensive understanding of networking systems, their architecture, function, and operation. The course explains how layers of different scope are combined to create a network. The course teaches s students the principles that underlie all networks and the application of those principles to current network protocols and systems. The course covers topics such as physical media, protocols, error detection, delimiting, lost and duplicate detection, flow and retransmission control, routing, congestion management, QoS, network management, security, and the common network.			

Module 27

Code	Course/Module Title	ECTS	Semester
BCYSCE 203- S2	Network Security	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	71
Description			
This module is designed to teach students how to monitor and control unauthorized access, misuse, and unwanted modification in networking systems. The course covers a wide range of topics, including network security, security protocol design and analysis, security modeling, trusted computing architecture security, security policy, web security.			

Module 28

Code	Course/Module Title	ECTS	Semester
BCYSCE 202- S1	Database System	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
This module is designed to teach fundamental concepts necessary for designing, using, and implementing database systems and applications. The course covers database modeling and design, languages and models provided by database management systems, and database system implementation techniques, object-oriented models, and relational databases.			

Module 29

Code	Course/Module Title	ECTS	Semester
BCYSCE 202- S2	Database System Security	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	71
Description			
This module is designed to teach students how to secure databases and data at rest. The course covers a range of topics, including database and server log monitoring, policies and procedures, standards, and change management.			

Module 30

Code	Course/Module Title	ECTS	Semester
BCYSCE 201- S2	Cybersecurity ethics	3	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	-	33	42
Description			
This module explores the ethical issues and responsibilities faced by Cybersecurity professionals. The course provides a study of the risk factors for digital and ethical misconduct, and it covers relevant laws, regulations, policies, standards, moral, and social issues. The course is designed to teach students the proper techniques to approach the difficult ethical dilemmas that arise from using technology. The course content includes an introduction to cybersecurity ethics, important ethical issues in cybersecurity, case studies, and techniques to approach ethical dilemmas. The course also addresses the salient ethical questions in relation to security, technologies, and artificial intelligence, freedom, and responsible use of technology.			

Module 31

Code	Course/Module Title	ECTS	Semester
BCYSCE 205- S2	Data Structures	5	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
This Module teaches students about the different types of data structures and algorithms used in various computational problems. The course covers topics such as arrays, stacks, queues, trees, graphs, and their various implementations, programming styles, and run-time representations. Students will also learn about algorithms for sorting, searching, and some graph algorithms. The course also covers algorithm analysis and efficient code design.			

Module 31

Code	Course/Module Title	ECTS	Semester
BCYSCE 205- S2	Python for Cybersecurity	6	7
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	72
Description			
This Module covers python programming language. The student will study essential python programming components. The modules include topics such as basic input output, data, variables, files, libraries. Hands-on practice on cybersecurity problems.			

Module 33

Code	Course/Module Title	ECTS	Semester
BCYSCE 301- S1	English Language	2	4
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	-	67	53
Description			
This Module covers python programming language. The student will study essential python programming components. The modules include topics such as basic input output, data, variables, files, libraries. Hands-on practice on cybersecurity problems.			

Module 34

Code	Course/Module Title	ECTS	Semester
BCYSCE 201- S1	Network Infrastructure and Administration Lab	4	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
1	2	48	52
Description			
This Module designed to provide students with the skills and knowledge necessary to maintain reliable computer systems in a multi-user environment.			

Module 35

Code	Course/Module Title	ECTS	Semester
BCYSCE 201- S1	Computer Organization and Architecture	5	3
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	78	47
Description			
This Module designed to provide students with the skills and knowledge necessary to maintain reliable computer systems in a multi-user environment.			

Module 36

Code	Course/Module Title	ECTS	Semester
BCYSCE 205- S1	Discrete Mathematic	4	3
Class (hr/w)	**Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	1	48	52
Description			
This Module introduces students to the basic concepts of discrete mathematics, covering topics such as sets, logic, enumeration methods, probability, recurrence relations, induction, linear algebra, and graph theory.			

Module 38

Code	Course/Module Title	ECTS	Semester
BCYSCE 100- S1	Mathematic	5	1
Class (hr/w)	**Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
3	1	64	61
Description			
This Module introduces students to the basic concepts of mathematics Calculus 1 and Calculus 2.			

Module 39

Code	Course/Module Title	ECTS	Semester
BCYSCE 105- S1	Linux Administrator	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	96
Description			
This Module is designed to provide students with the skills and knowledge necessary to become a Linux system administrator. The course covers a wide range of topics, including installing and configuring the Linux operating system, managing software and devices, creating and maintaining system users and groups, and controlling processes.			

Module 40

Code	Course/Module Title	ECTS	Semester
BCYSCE 105- S1	Fundamental of Programming	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			
This Module covers the fundamental concepts of structured programming, including software development methodology, designing, coding, debugging, testing, and documenting programs using a high-level programming language. The course is designed to teach students how to solve complex problems by writing computer programs			

Module 41

Code	Course/Module Title	ECTS	Semester
BCYSCE 104- S1	Fundamental of Electrical Engineering	7	1
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			
This Module covers the basics of electrical engineering. The course focuses on the creation, manipulation, transmission, and reception of information by electronic means. The course covers elementary signal theory, time- and frequency-domain analysis, and principles of feedback. The course also covers the basics of DC and AC circuits, including single-phase and three-phase circuits.			

Module 42

Code	Course/Module Title	ECTS	Semester
BCYSCE 103- S1	Introduction to Sociology	4	2
Class (hr/w)	**Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	-	33	67
Description			
This Module introduces students to the scientific study of human society, culture, and social interactions with special emphasize of cybersecurity and technology and their effects on society. The course covers a range of topics, including socialization, research methods, diversity and inequality, cooperation and conflict, social change, social institutions, and organizations. Students will learn about the origins of sociology as a discipline, and some major sociological theories and research methods. The course addresses the social, political, legal, criminological, and economic dimensions of cybersecurity through a social science framework			

Module 43

Code	Course/Module Title	ECTS	Semester
BCYSCE 101- S2	Fundamentals of Digital Electronics	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	96
Description			
This Module introduces students to combinational and sequential logic circuits, number systems, Boolean algebra, logic families, medium scale integration (MSI), and the design of digital circuits.			

Module 44

Code	Course/Module Title	ECTS	Semester
BCYSCE 103- S1	Introduction to Probability and Statistics	5	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	2	64	61
Description			
This module is designed to provide students with a solid foundation in the principles and methods of Probability and Statistics. The module covers topics such as probability theory, statistical inference, hypothesis testing, regression analysis, and data analysis, and to prepare them for further study in related fields such as data science, economics, and engineering.			

Module 45

Code	Course/Module Title	ECTS	Semester
BCYSCE 107- S2	Object oriented programming	7	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USSWL (hr/w)**
2	3	79	96
Description			
This module is designed to teach students how to program in C++ and use some of its most important APIs.The course emphasizes current techniques in object-oriented design, analysis, and programming. The students will have demonstrated the ability to understand object-oriented programming principles, write, compile, and execute C++ programs, understand the C++ architecture, and use the C++ APIs, understand and use of inheritance and polymorphism as implemented in C++, understand and use the exception handling mechanism of C++, perform standard input-output operations, and understand and use GUI components.			

Module 46

Code	Course/Module Title	ECTS	Semester
BCYSCE 108- S2	Foundation of Cybersecurity Engineering	7	2
Class (hr/w)	**Practice.**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	3	79	96
Description			
This course introduces student to basic concept of cybersecurity engineering. The module covers topics such as: Introduction to Cybersecurity, Cyber security Fundamentals, Cybersecurity Operation, Cybersecurity Ethics and Law, Incident Response and Recovery.			

Module 47

Code	Course/Module Title	ECTS	Semester
BCYSCE 109- S2	Human rights and Democracy	4	2
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/w)**
2	-	33	67
Description			
The module provides students with a comprehensive understanding of the relationship between democracy and human rights, and how they can be used to promote sustainable development and lasting peace.			

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